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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/661,793

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Chi-An Kao

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09/05/2006

DUANE MORRIS, LLP

IP DEPARTMENT

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PHILADELPHIA, PA 19103-4196

EXAMINER

NGUYEN, KHIEM D

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 09/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/661,793

Applicant(s)

KAO ET AL.

Examiner

Khiem D. Nguyen

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-14 is/are allowed.
- 6) ☒ Claim(s) 8-11 and 15-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

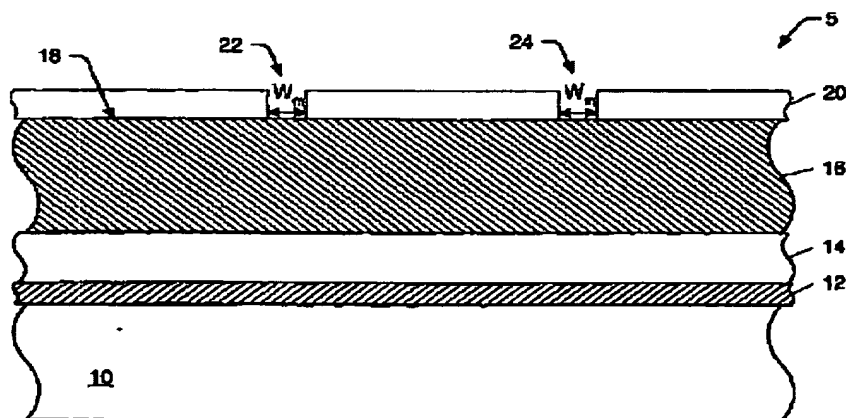
A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

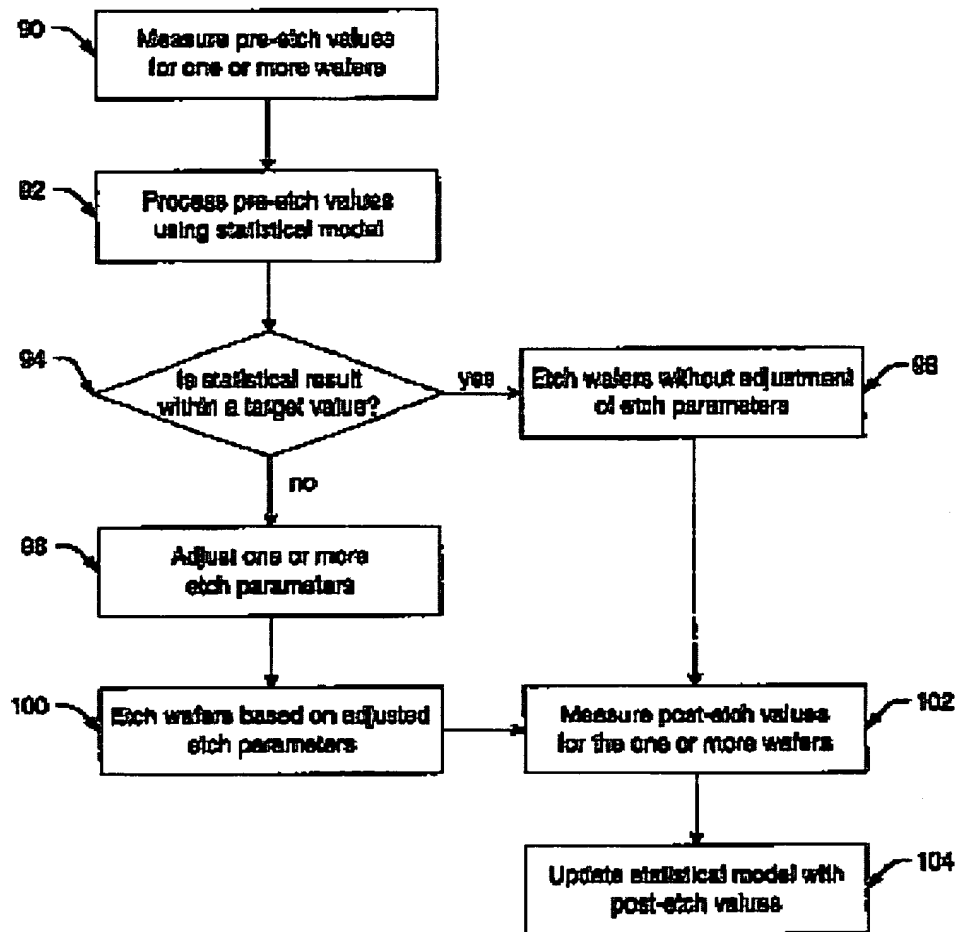
2. Claims 8-11 and 15-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Sedigh et al. (U.S. Patent 6,893,974).

In re claim 8, Sedigh discloses a system for creation of an opening of controllable format through a layer of insulation material, comprising:

means for creating an opening 22, 24 through a layer of etch resist material 20 provided over the surface of a layer of insulating material 16 having been deposited over the surface of a substrate 10 (col. 16, line 51 to col. 17, line 56 and FIG. 2);

**FIG. 2**

means, including a feedback mechanism (col. 13, lines 22-36), for assuring that an obtained critical dimension measurement of the opening 22, 24 created through the layer of etch resist material 20 is within design specification (col. 10, lines 6-52 and FIG. 9);

**FIG. 9**

means for creating an opening 32, 34 through the layer of insulation material 16, whereby a diameter of the layer of insulation material 16 is dependent on a diameter of

the opening 32,34 created through the layer of etch resist material 20 (col. 18, lines 4-57 and FIG. 3); and

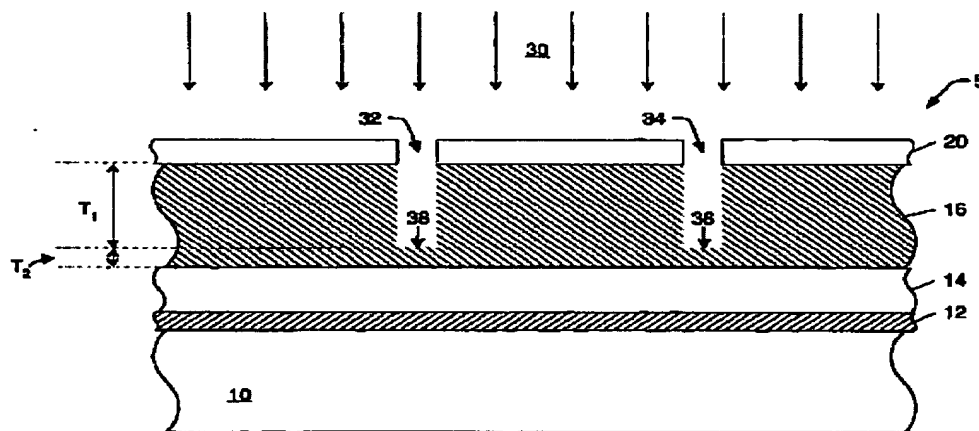


FIG. 3

means, including a feedback mechanism, (col. 13, lines 22-36) for assuring that the opening 32, 34 created through the layer of insulation material 16 is within design specification (col. 10, lines 6-52 and FIG. 9).

In re claim 9, as applied to claim 8 above, Sedigh discloses all claimed limitations including the limitation wherein means, including a feedback mechanism, for assuring that an obtained critical dimension measurement of the opening created through the layer of etch resist material is within design specification comprising: means for linking to a software supervisory function, thereby including data transmission functions, means for linking to a software function equally being linked to a software supervisory function, thereby including data transmission functions; means for data manipulating capabilities, thereby including manipulating interdependent data; means for interfacing with semiconductor equipment, thereby including equipment functioning in a supporting

role to the semiconductor equipment; and means for creating instructions for the semiconductor equipment, thereby including equipment functioning in a supporting role to the semiconductor equipment (col. 23, line 2 to col. 24, line 45 and FIG. 8).

In re claim 10, as applied to claim 8 above, Sedigh discloses all claimed limitations including the limitation wherein means for assuring that the opening created through the layer of insulation material is within design specification comprising: means for linking to a software supervisory function, thereby including data transmission functions, means for linking to a software function equally being linked to a software supervisory function, thereby including data transmission functions; means for data manipulating capabilities, thereby including manipulating interdependent data; means for interfacing with semiconductor equipment, thereby including equipment functioning in a supporting role to the semiconductor equipment; and means for creating instructions for the semiconductor equipment, thereby including equipment functioning in a supporting role to the semiconductor equipment (col. 23, line 2 to col. 24, line 45 and FIG. 8).

In re claim 11, as applied to claim 8 above, Sedigh discloses all claimed limitations including the limitation wherein the system further comprising means for creating an opening having non-linear sidewalls through a layer of insulation material by applying a high-polymer based etch to the surface of the layer of insulation material (col. 23, line 2 to col. 24, line 45 and FIG. 8).

In re claim 15, Sedigh discloses a system for creation of an opening of controllable format through a layer of insulation material, comprising:

means for creating an opening 22, 24 through a layer of etch resist material 20 provided over the surface of a layer of insulating material 16 having been deposited over the surface of a substrate 10 (col. 16, line 51 to col. 17, line 56 and FIG. 2);

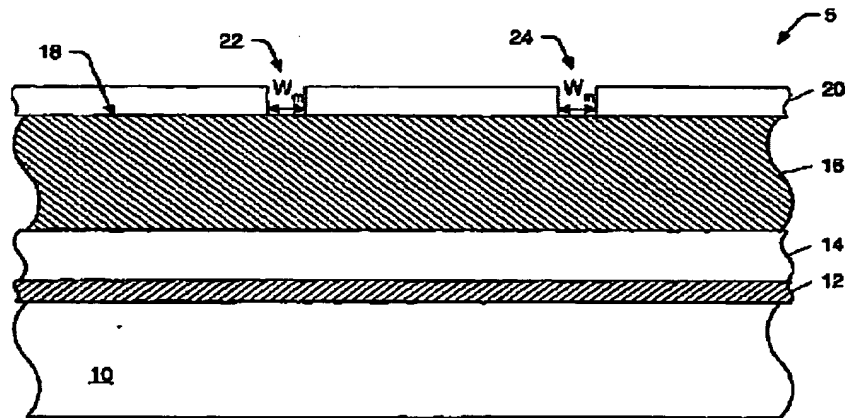


FIG. 2

means, including a feedback mechanism (col. 13, lines 22-36), for obtaining a critical dimension measurement of the opening 22, 24 created through the layer of etch resist material 20 assuring that the critical dimension measurement is within design specification (col. 10, lines 6-52 and FIG. 9);

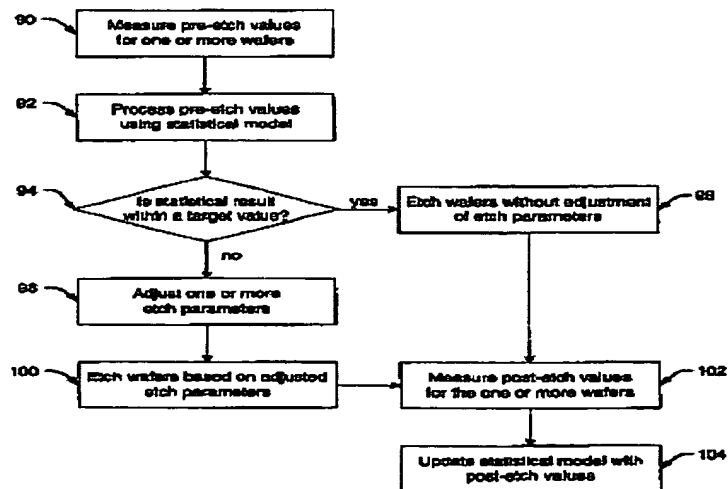


FIG. 9

means for creating an opening 32, 34 having non-linear sidewalls through the layer of insulation material 16 by applying a high-polymer based etch to the surface of the layer of insulation material, whereby a diameter of opening having non-linear sidewalls is dependent on a diameter of the opening 32,34 created through the layer of etch resist material 20 (col. 18, lines 4-57 and FIG. 3); and

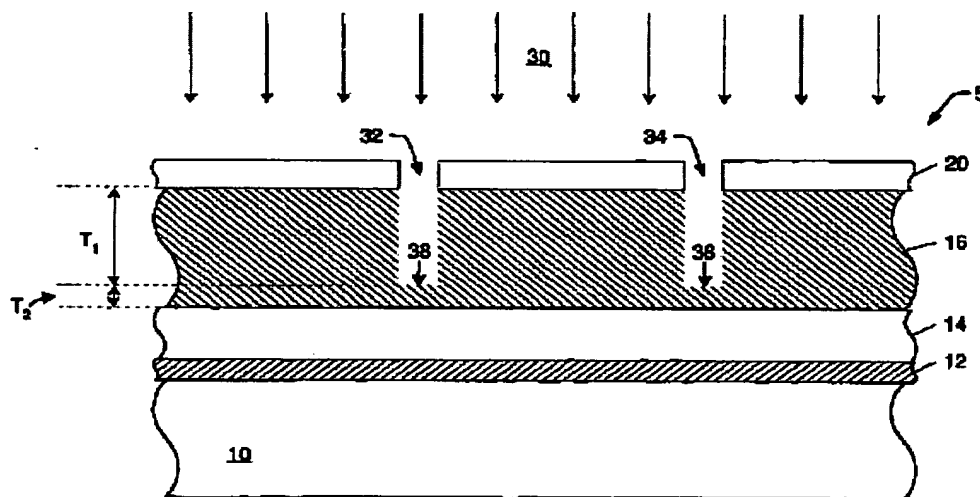


FIG. 3

means, including a feedback mechanism, (col. 13, lines 22-36) for assuring that the opening 32, 34 created through the layer of insulation material 16 is within design specification (col. 10, lines 6-52 and FIG. 9).

In re claim 16, Sedigh discloses a system for creation of an opening of controllable format through a layer of insulation material, comprising:

means, including a feedback mechanism (col. 13, lines 22-36), for creating an opening through a layer of etch resist material provided over the surface of a layer of insulating material having been deposited over the surface of a substrate, such that the

opening has a critical dimension measurement that is within design specification; (col. 10, lines 6-52 and FIG. 9);

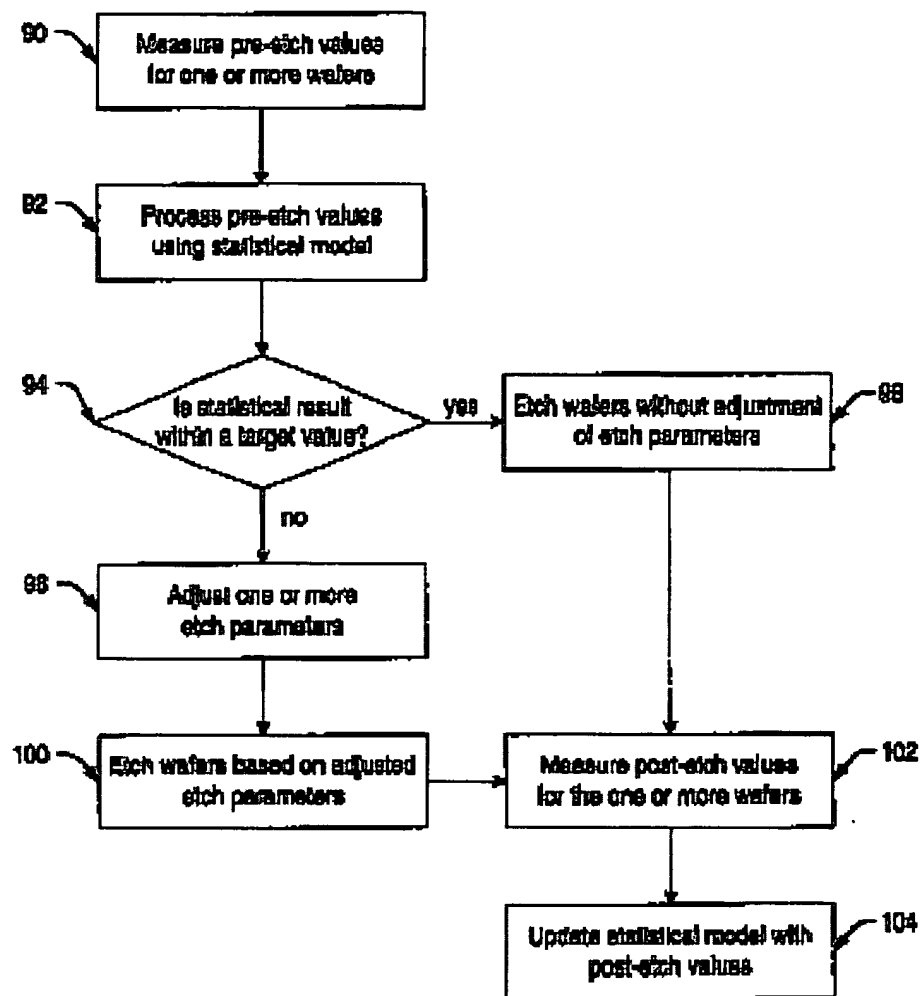


FIG. 9

means for creating an opening 32, 34 through the layer of insulation material 16, whereby a diameter of layer of insulation material is dependent on a diameter of the

opening 32,34 created through the layer of etch resist material 20 (col. 18, lines 4-57 and FIG. 3); and

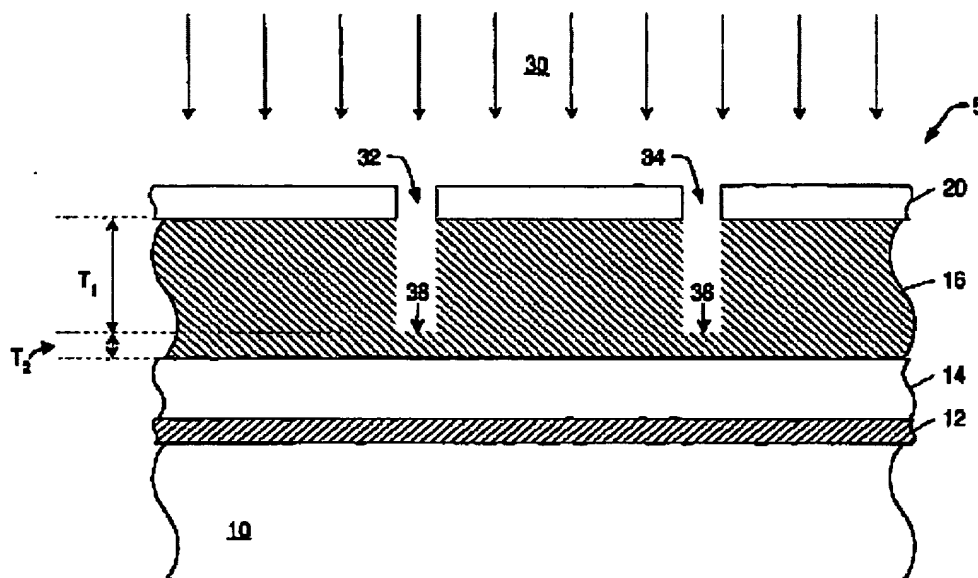


FIG. 3

means, including a feedback mechanism, (col. 13, lines 22-36) for assuring that the opening 32, 34 created through the layer of insulation material 16 is within design specification (col. 10, lines 6-52 and FIG. 9).

In re claim 17, as applied to claim 16 above, Sedigh discloses all claimed limitations including the limitation wherein the means, including a feedback mechanism (col. 13, lines 22-36), for creating an opening, 32, 34, include means for making corrections to an original critical dimension measurement that is not within design specification.

Allowable Subject Matter

3. Claims 12-14 were previously allowed.

Response to Applicants' Amendment and Argument

4. Applicant's arguments filed June 15th, 2006 have been fully considered but they are not persuasive.
5. Applicants contends that the reference Sedigh et al. (U.S. Patent 6,893,974), herein known as Sedigh, does not include any feedback mechanism for assuring that ADI-CD's are within specification limits.

In response to Applicants' contention that Sedigh does not teach or suggest means, including a feedback mechanism, for assuring that an obtained critical dimension measurement of the opening created through the layer of etch resist material is within design specification, Examiner respectfully disagrees. Applicants are directed to (col. 13, lines 22-36) where Sedigh discloses a feedback control of the etch parameters to continuously improve the statistical model. Such feedback control advantageously decreases the amount of variation between the etch results and the desired results for successive etch processes. Furthermore, as shown in FIG. 9, Sedigh teaches that the feedback mechanism checks to see that if the obtained critical dimension measurement of the opening 22, 24 created through the layer of etch resist material 20 (FIG. 2) is within design specification (target value) (see steps 94, 96, 98 of FIG. 9). If the critical dimension measurement of the opening is not within the design specification (target value) (col. 12, lines 5-44 and FIG. 9), a feedback signal is then send so that one or more etch parameters can be adjust to yield an update statistical model. Thus, Sedigh does teach a feedback mechanism for assuring that an obtained critical dimension measurement of the opening is within design specification.

For this reason, Examiner holds the rejection proper.

Conclusion

- 6. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


- 7.** Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D. Nguyen whose telephone number is (571) 272-1865. The examiner can normally be reached on Monday-Friday (8:30 AM - 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2823

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

K.N.
August 29, 2006


BROOK KEBEDE
PRIMARY EXAMINER